

**Commonwealth of Kentucky**  
**Division for Air Quality**  
***RESPONSE TO COMMENTS***

ON THE TITLE V DRAFT PERMIT V-05-067

Carbide Industries, LLC

3204 Industrial Parkway, KY HWY 1523

Calvert City, KY 42029

March 30, 2007

Vahid Bakhtiar, Reviewer

SOURCE ID: 021-157-00025

AGENCY INTEREST #: 2928

ACTIVITY ID: APE20040001

**SOURCE DESCRIPTION:**

Carbide Industries, LLC located in Calvert City, Kentucky operates primarily an Industrial Inorganic Chemical – calcium carbide production facility. Acetylene is also produced at the facility as well as desulfurization reagents, calcium hydroxide, calcined anthracite coal, and electrode paste. The products are sold to a wide range of industries from acetylene producers, chemical manufacturers, steel foundries to aluminum producers.

The Calvert City facility produces calcium carbide from coke and lime in a 35 MW semi-sealed 3-phase submerged electric arc furnace. The calcium carbide is crushed and sized per customer specifications. Desulfurization reagents are produced by grinding calcium carbide in a ball mill to produce a very fine particle size and may be blended with various additives. Acetylene is also produced by the introduction of calcium carbide into water. The acetylene is then piped to the customer. The byproduct of the acetylene production, calcium hydroxide, is also shipped or piped to the customer. Electrode paste is produced by combining calcined coal and coal tar pitch. The pitch is heated to a semi-fluid state while mixing by a 2.009 mmBtu/hr natural gas process steam boiler. All raw materials are received and solid products are shipped via railcar or truck.

**PUBLIC AND U.S. EPA REVIEW:**

On January 10, 2007, the public notice on availability of the draft permit and supporting material for comments by persons affected by the plant was published in *The Tribune-Courier* in Benton, Kentucky. The public comment period expired 30 days from the date of publication.

*Comments received*

Comments were received from Carbide Industries, LLC on February 9, 2007. Attachment A to this document lists the comments received and the Division's response to each comment. Minor changes were made to the permit as a result of the comments received, however, in no case were any emissions standards, or any monitoring, recordkeeping or reporting requirements relaxed. Please see Attachment A for a detailed explanation of the changes made to the permit. The U.S. EPA has 45 days to comment on this proposed permit.

# ATTACHMENT A

## Response to Comments

Comments on Carbide Industries, LLC Company's Draft Title V Air Quality Permit submitted by Frank Sizemore, Engineering and Project Manager.

### 1. Permit Application Summary Form

a. On page 2, the second paragraph, third line, "Environmentally Safe Desulfurization" should read "Environmentally Clean Desulfurization".

*Division's response: Comment acknowledged, change made.*

b. Carbide Industries, LLC is not clear as to the source of the potential to emit figures listed in the table on page 2. These do not appear to be consistent with the permit application figures.

*Division's response: Comment acknowledged, change made. The potential to emit listed in the table are based on the process steam boilers firing on No. 2 fuel oil. Since the facility is removing some of the emission points and it will use only natural gas for its boiler, summary table will be revised accordingly. The potential to emit calculations will be based on burning only natural gas.*

c. As noted in the third paragraph on page 2, the permit application submitted in 2000 did include an increase in the furnace power to 40 Megawatts. The furnace currently remains shut down, and Carbide Industries, LLC does not expect the furnace power to exceed 35 Megawatts at such time as the furnace returns to operation. The nameplate rated capacity of the furnace is 35 megawatts. See also the Source Description in the Statement of Basis, on page 2.

*Division's response: Comment acknowledged, change made.*

### 2. Permit Statement of Basis – Source Description

The second paragraph discusses the production of electrode paste with heat supplied by a 6.277 mmBtu/hour natural gas boiler or a 6.470 mmBtu/hour standby boiler. These boilers have been replaced by a 2.009 mmBtu/hour natural gas fired process steam boiler in October 2003. This change did not result in an increase in emissions since two boilers were replaced by one and the new boiler has a lower unit rating than either of the previously existing boilers.

In the third paragraph on page 1, the first sentence is not really necessary to the description and Carbide Industries, LLC requests that it be deleted. Alternatively, the reference to "hazardous" operating conditions should be changed to "potentially hazardous" operating conditions. If the coke is not sufficiently dry, there is a possibility that excess moisture would be introduced into furnace which could cause flaring around the electrodes.

*Division's response: Comment acknowledged, change made.*

### **3. Permit Statement of Basis – Control Equipment**

The wet scrubbers and the eight baghouse system provide control to different emission streams from the submerged electric arc furnace. The discussion under “Wet Scrubbers” should be revised as follows. The first sentence should be revised to read: “The gas stream from the submerged electric arc furnace is vented through a wet venturi scrubber to remove particulate matter.” There are two wet venturi scrubbers in parallel, which provides an installed spare. The second sentence of that section regarding the baghouse system should be deleted because the gas stream exits the scrubber and is sent to the coke dryer as process fuel or is flared.

The first paragraph under the heading “Dust Collectors/Baghouses” should be revised to read: “The arc furnace is equipped with an eight baghouse system which controls particulate from tapping and furnace operations that is collected by the furnace hood and directed to the baghouse system.” The offgas stream that goes through the wet venturi scrubber is directed to the coke dryer or the flare and not to the baghouse system.

*Division’s response: Comment acknowledged, change made.*

### **4. Permit Statement of Basis – Emission Point Listing**

On page 4 and 16, the identification number for the Paste Plant Ball Mill should be PA-2(140) instead of PA-2(133).

*Division’s response: Comment acknowledged, change made.*

### **5. General Comment on Permit Section B, Emission Point Descriptions**

For purposes of tracking compliance and recordkeeping, it is Carbide Industries’ understanding that the text in the “Description” section is for informational purposes and that the substantive requirements are contained in the other sections of the permit.

*Division’s response: Comment acknowledged.*

### **6. PA-1 (07) Coke Dryer and Emission Points with Similar Language**

Is the “material process rate” that is monitored and recorded the same as the “monthly throughput in tons” as specified in Emission Limitations under Condition 2.b.? This comment applies throughout the permit where these terms are used.

With respect to the requirements for opacity for this and the other emission points, except the submerged electric arc furnace and the process boilers which are addressed separately, Carbide Industries requests that the permit be revised to provide as follows:

Compliance with the opacity limit shall be determined as follows:

- i. During periods of normal operation of the control device or baghouse, no compliance demonstration is necessary.

ii. If any of the emissions units associated with a control device or baghouse are in operation during any period of malfunction of the associated control device or baghouse, the permittee shall determine compliance through maintenance of the records required under 5. Specific Recordkeeping Requirements.

Section 4 Monitoring: The permittee shall conduct daily observations during all periods of startup, shutdown, or malfunction of any control devices or baghouses. If visible emissions are observed, the permittee shall perform an EPA Method 9 opacity reading immediately or document why such test is unable to be performed.

Section 5 Specific Recordkeeping Requirements: During all periods of startup, shutdown, or malfunction of any control devices or baghouses a daily log of the following information shall be kept:

- i. Whether any air emissions were visible from the facilities associated with the control device or baghouse of concern.
- ii. Whether the visible emissions were normal for the process.

If no visible emissions are observed, then no further observations or records are required. If visible emissions are observed, the permittee shall record the following information:

1. The cause of the visible emissions.
2. Any corrective actions
3. If performed, the dates, times, and results of each EPA Method 9 opacity reading or document why such test is unable to be performed.

The permittee shall record the occurrence, duration, cause, and any corrective action taken for each incident when the emission points are in operation but the associated control device or baghouse is not.

This language has been used in other permits.

*Division's response: The Division acknowledges the comment but does not agree with the changes. Since meeting PM emissions does not guarantee meeting opacity limits, bi-weekly visual observations are necessary. Some requirements cited by the facility in this comment, such as whether the visible emissions were normal for the process, have been objected by EPA. The requirements used in the draft permit for this emission point are the current requirements used by KYDAQ.*

## **7. PA-1 Submerged Electric Arc Furnace**

Applicable Regulations and Emission Limitations, page 4: Since the furnace particulate emissions are regulated by 40 CFR Part 60, Subpart Z, the new process operations regulation does not apply and all conditions based on 401 KAR 59:010 for this emission point should be

deleted.

*Division's response: Comment acknowledged, change made.*

Condition 2.a., sulfur dioxide limitation: Carbide Industries requests clarification as to the basis for applying a sulfur dioxide limitation in the permit pursuant to 401 KAR 59:105. In addition, it is not clear how compliance with the 85 percent reduction requirement is demonstrated.

*Division's response: Comment acknowledged, change made. The emission factor for SO<sub>2</sub> was revised since the previous emission factor used in AP-42 does not apply to this process. The new emission factor was based on the same process in another facility run by this facility. Also some emission points have been removed from the permit and SO<sub>2</sub> limits are now less than 100 tpy, hence 59:105 does not apply anymore. It should be added that the facility will do stack testing and the emission factor for SO<sub>2</sub> will be determined and updated after the stack testing and POC table will be revised accordingly.*

Condition 3, Testing Requirements: 40 CFR 60.266(c)(2)(i) refers to furnaces "with wet scrubber control devices, sealed electric submerged arc furnaces, or semi enclosed electric arc furnaces" not "semi-sealed" furnaces. Page 7 should be revised accordingly.

*Division's response: Comment acknowledged, change made. Testing Requirements was revised based on 40 CFR 60.266(c)(2)(ii).*

Condition 4, Monitoring Requirements: The term "Administrator" should be deleted from Condition f on page 9 and replaced with "Cabinet" or "Division". Additionally, those stacks or vents subject to the more detailed NSPS monitoring requirements, should not be required to comply with the added provisions of conditions i and j.

*Division's response: The term "Administrator" is used in 40 CFR 60 Subpart Z, hence shall not be replaced. Since 40 CFR 60 Subpart Z governs PM and Opacity limits, 401 KAR 59:010 does not apply to the emission unit and conditions (i) and (j) have been deleted as suggested by the facility.*

Condition 5, Specific Recordkeeping Requirements: Condition 5.a should be revised to track the record keeping requirements in 40 CFR 60.265(a). As currently worded, the condition tracks the language of other portions of the permit where 401 KAR 59:010 apply. In addition, since the NSPS requires continuous opacity monitors the provisions regarding keeping logs of visual emissions and method 9 opacity readings are unnecessary and confusing. Conditions 5.b., 5.c and 5.d should be deleted.

*Division's response: Comment acknowledged, change made.*

Condition 6.c, Specific Reporting Requirements should be deleted consistent with the preceding comments.

*Division's response: Comment acknowledged, change made.*

**8. Emission Point PA-2 Existing Calcine Furnaces; Emission Point PA-2(103) New Calcine Furnace; PA-2(133) Paste Plant Ball Mill; and PA-4 Acetylene Operations**

See preceding comments regarding opacity monitoring and recordkeeping requirements in Conditions 4 and 5.

*Division's response: emission Point PA-2 Existing Calcine Furnaces, and Emission Point PA-2 (103) New Calcine Furnace have been removed from the permit, as the facility requested these units to be removed. For the response to the comments for opacity, please see the response to comment 6.*

## **9. EP 02 (104) and EP 03(105)**

As pointed out above, the 6.277 mmBtu/hour natural gas boiler and the 6.470 mmBtu/hour standby natural gas boiler have been replaced by a 2.009 mmBtu/hour natural gas fired process steam boiler. The new Fulton Model 50 vertical tubeless boiler was installed in October 2003. The boiler capacity of 2 mmBtu/hour replaced a total capacity of 12.75 mm Btu/hour for two boilers. This change did not result in an increase in emissions since two boilers were replaced by one and the new boiler has a lower unit rating than either of the previously existing boilers. The emission limitations should be revised to reflect the reduction in total heat input capacity pursuant to 401 KAR 59:015.

*Division's response: Comment acknowledged, change made. Since the facility uses only natural gas for burning, all the language relating to No.2 fuel oil has been deleted.*

## **12. Section G, Condition (f) 1.d**

Section 24 of 401 KAR 52:020 established the emergency affirmative defense and sets out the requirements for use of the defense in detail. As such, the permit should follow the language of the regulation that establishes the defense. Notification under 401 KAR 50:055 or KRS 224.01-400 are not elements of the emergency affirmative defense in the regulation. It is inappropriate for the Division by permit condition to modify the language of the regulation. Carbide Industries requests that the references to notice under 401 KAR 50:055 and KRS 224.01-400 in Section G, Condition (f)1.d be deleted. The deletion of those references will not have an adverse effect on those regulatory programs because Condition (f)1.e specifically states that compliance with the permit condition does not relieve the permittee from other local, state or federal notification requirements.

*Division's response: Division does not agree with this change, as these are general requirements used in Title V permits.*

## **CREDIBLE EVIDENCE:**

This permit contains provisions which require that specific test methods, monitoring or recordkeeping be used as a demonstration of compliance with permit limits. On February 24, 1997, the U.S. EPA promulgated revisions to the following federal regulations: 40 CFR Part 51, Sec. 51.212; 40 CFR Part 52, Sec. 52.12; 40 CFR Part 52, Sec. 52.30; 40 CFR Part 60, Sec. 60.11 and 40 CFR Part 61, Sec. 61.12, that allow the use of credible evidence to establish compliance with applicable requirements. At the issuance of this permit, Kentucky has only adopted the provisions of 40 CFR Part 60, Sec. 60.11 and 40 CFR Part 61, Sec. 61.12 into its air quality regulations.